3743

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)
Goodson, et al.)
Serial No: **10/053,859**)
Filed: **01/19/02**)
For: **Electroosmotic Microchannel Cooling System**)

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Applicant hereby voluntarily discloses the items listed on the attached Form PTO-1449 to the Assistant Commissioner for Patents. Copies of items A – ALC (331 references) are enclosed herewith.

Applicant further reserves the right to establish the patentability of the claimed invention over any of the listed information should they be applied as references, and/or to prove that some of the cited information may not be prior art, and/or to prove that some of the cited information may not be enabling for the teachings they purport to offer. This statement further should not be construed as a representation that an exhaustive search has been made, or that the information cited herewith is material, or that there does not exist information more material to the examination of the present Application. The Examiner is specifically requested not to rely solely on the information submitted herein. On the contrary, the Examiner is requested to conduct an independent and thorough review of the information, and to form independent opinions as to their significance.

It is respectfully requested that the Examiner initial and return copies of the enclosed PTO-1449 and to indicate in the official file wrapper of the above-identified patent application that each item of the cited information has been considered.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to account no. 09-0528.

Date: 1/7/03

John J. Timar
Attorney for Applicant
Reg#32,497

Womble Carlyle Sandridge & Rice, PLLC
P.O. Box 7037
Atlanta, GA 30357-0037
(404) 872-7000 (Telephone)
(404) 888-7490 (Facsimile)

Docket No.:S243 1020.1

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I hereby certify that this document is being deposited as First Class Mail in an envelope addressed to Assistant Commissioner for Patents, Washington D.C., 20231-0001 on 1/8/03.

Form PTO-1449

Attorney Docket No.	Serial No.
S243 1020.1	**10/053,859**
Applicant: **Goodson, et al.**	
Filing Date: **01/19/02**	Group: **3743**

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	AA	5,869,894	02/97	Degani, et al.	257	723	
	AB	5,901,040	05/99	Cromwell, et al.	361	704	
	AC	6,025,208	02/00	Chui, et al.	438	50	
	AD	6,052,287	04/00	Palmer, et al.	361	767	
	AE	6,133,631	10/00	Belady	257	714	
	AF	6,137,693	10/00	Schwiebert, et al.	361	803	
	AG	6,191,945	02/01	Belady, et al.	361	704	
	AH	6,285,550	09/01	Belady	361	704	
	AI	6,297,551	10/01	Dudderar, et al.	257	723	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
	AJ	97212126.9	07/98	China	B01D	61/42	X	

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AK	"Micro Channel Heat Exchanger for Cooling Electrical Equipment," Kawano, et al., American Society of Mechanical Engineers, Heat Transfer Division, (Publication) HTD; 1998; v. 361 – 3, p. 173 - 180

* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

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U.S. PATENT DOCUMENTS

Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	BA	4,009,423	02/77	Wilson	361	385	
	BB	4,067,237	01/78	Arcella	73	204	
	BC	4,120,019	10/78	Arii, et al.	361	385	
	BD	4,151,548	04/79	Klein, et al.	357	82	
	BE	4,392,362	07/83	Little	62	514	
	BF	4,638,854	07/83	Noren	165	76	
	BG	4,675,783	06/87	Murase, et al.	361	385	
	BH	4,697,427	10/87	Niggemann, et al.	62	119	
	BI	4,829,432	05/89	Hershberger, et al.	361	424	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	BJ	"Experimental Study on an Enhanced Microchannel Heat Sink for Microelectronics Applications," Keska, et al., American Society of Mechanical Engineers, EEP; 1999, v. 26 (2), p. 1235 - 1259

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Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE

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U.S. PATENT DOCUMENTS

Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	CA	4,858,093	08/89	Sturgeon	363	20	
	CB	4,938,280	07/90	Clark	165	80.4	
	CC	4,951,740	08/90	Peterson, et al.	165	32	
	CD	4,975,825	12/90	Huss, et al.	363	141	
	CE	5,010,292	4/91	Lyle, Jr.	323	274	
	CF	5,131,859	07/92	Bowen, et al.	439	194	
	CG	5,144,531	09/92	Go, et al.	361	382	
	CH	5,162,974	11/92	Currie	361	385	
	CI	5,199,165	4/93	Crawford, et al.	29	846	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	Translation No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	CJ	"High Performance Forced Air Cooling Scheme Employing Microchannel Heat Exchangers," Kleiner, et al., IEEE Transactions on Components, Packaging, and Manufacturing Tech., Part A, Dec 1995; v. 18, no. 4, p. 795- 804

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Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	DA	5,229,915	07/93	Ishibashi, et al.	361	385	
	DB	5,311,397	05/94	Harshberger, et al.	361	683	
	DC	5,313,099	05/94	Tata, et al.	287	717	
	DD	5,339,214	08/94	Nelson	361	695	
	DE	5,365,749	11/94	Porter	62	259.2	
	DF	5,461,541	10/95	Wentland, Jr. et al.	361	707	
	DG	5,471,850	12/95	Cowans	62	223	
	DH	5,504,650	04/96	Katsui, et al.	361	697	
	DI	5,504,924	04/96	Ohashi, et al.	375	800	

FOREIGN PATENT DOCUMENTS

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	DJ	"Optimal Thermal Design of Air Cooled Forced Convection Finned Heat Sinks, Experimental Verification," Knight, et al.,
		Conference: Intersociety Conference on Thermal Phenomena in Electronic Sysems – I-Therm '92, 2/5 – 8/92, Austin, TX

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	EA	5,508,908	04/96	Kazama, et al.	363	141	
	EB	5,513,070	04/96	Xie, et al.	361	700	
	EC	5,544,412	08/96	Romero, et al.	29	832	
	ED	5,565,705	10/96	Romero, et al.	257	718	
	EE	5,579,827	12/96	Chung	165	80.3	
	EF	5,598,320	1/97	Toedtman, et al.	361	687	
	EG	5,608,262	3/97	Degani, et al.	257	723	
	EH	5,621,635	4/97	Takiar	363	141	
	EI	5,646,828	7/97	Degani, et al.	361	715	

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	EJ	"Heat Transfer of Microstructures for Integrated Circuits," Koh, et al. International Communications in Heat and Mass Transfer; Jan – Feb 1986; v. 13, no. 1, p. 89 – 98.

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Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	FA	6,034,425	03/00	Chiang, et al.	257	697	
	FB	6,121,682	09/00	Kim	257	723	
	FC	6,127,726	10/00	Bright, et al.	257	691	
	FD	6,154,370	11/00	Degani, et al.	361	761	
	FE	6,201,302	03/01	Tzu	257	724	
	FF	6,204,562	03/01	Ho, et al.	257	777	
	FG	6,215,193	04/01	Tao, et al.	257	777	
	FH	6,268,660	07/01	Dhong, et al	257	774	
	FI	6,278,190	08/01	Tomita	257	777	

FOREIGN PATENT DOCUMENTS

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	FJ	"Convection Cooling of Microelectronic Chips," Konecni, et al., Conference: Intersociety Conference on Thermal Phenomena in Electronic Systems – I-Therm '92, 2/5 – 8/92, Austin, Texas

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Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	GA	6,335,566	01/02	Hirashima, et al.	257	686	
	GB	6,344,682	02/02	Tomita	257	686	
	GC	5,965,813	10/99	Wan, et al.	73	204.26	
	GD	5,965,001	10/99	Chow, et al.	204	600	
	GE	5,978,220	11/99	Frey, et al.	361	699	
	GF	5,997,713	12/99	Beetz, Jr., et al.	205	124	
	GG	5,998,240	12/99	Hamilton, et al.	438	122	
	GH	6,007,309	12/99	Hartley	417	322	
	GI	6,010,316	01/00	Haller, et al.	417	322	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	Translation No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	GJ	"Modeling of Two-Phase Microchanel Heat Sinks for VLSI Chips," Koo, et al., Proceedings of the IEEE Micro Electro Mechanical Systems (MEMS); 2001; p. 422 - 426

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Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	HA	5,801,442	09/98	Hamilton, et al.	257	714	
	HB	5,835,345	11/98	Staskus, et al.	361	699	
	HC	5,836,750	11/98	Cabuz	417	322	
	HD	5,858,188	01/99	Soane, et al.	204	454	
	HE	5,863,708	01/99	Zanzucchi, et al.	430	320	
	HF	5,870,823	02/99	Bezama, et al.	29	848	
	HG	5,880,524	03/99	Xie	257	704	
	HH	5,901,037	05/99	Hamilton, et al.	361	699	
	HI	5,940,270	08/99	Pucket	361	699	

FOREIGN PATENT DOCUMENTS

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	HJ	"Simulation of Micro-Channel Heat Sinks for Optoelectronic Microsystems," Kreutz, et al., Microelectronics Journal; October 2000; v. 31, no. 9, p. 787 – 790

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U.S. PATENT DOCUMENTS

Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	IA	6,013,164	01/00	Paul, et al.	204	450	
	IB	6,019,882	02/00	Paul, et al.	204	450	
	IC	6,054,034	04/00	Soane, et al.	204	601	
	ID	6,096,656	08/00	Matzke, et al.	438	702	
	IE	6,101,715	08/00	Fuesser, et al.	29	890.03	
	IF	6,129,145	10/00	Yamamoto, et al.	165	168	
	IG	6,146,103	11/00	Lee, et al.	417	50	
	IH	6,154,363	11/00	Chang	361	699	
	II	6,174,675	01/01	Chow, et al.	435	6	

FOREIGN PATENT DOCUMENTS

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	IJ	"Fabrication of Very Smooth Walls and Bottoms of Silicon Microchannels for Heat Dissipation of Semiconductor Devices," Dwivedi, et al., Microelectronics Journal; 2000; v. 31, no. 6, p. 405 – 410.

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Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	JA	6,210,986	01/01	Arnold, et al.	438	42	
	JB	6,216,343	04/01	Leland, et al.	29	890.032	
	JC	6,227,809	05/01	Forster, et al.	417	53	
	JD	6,234,240	05/01	Cheon	165	80.3	
	JE	6,238,538	05/01	Parce, et al.	204	600	
	JF	2001/0016985	08/21	Insley, et al.	29	890.039	
	JG	6,287,440	09/01	Arnold, et al.	204	450	
	JH	2001/0024820	09/01	Mastromatteo, et al.	435	287.2	
	JI	6,301,109	10/01	Chu, et al.	361	690	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	JJ	"Silicon Micromachining and Micromachines," Esashi, Wear; September 1, 1993; v. 168
		No. 1 – 2, p. 181 - 187

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Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	KA	6,313,992	11/01	Hildebrandt	361	700	
	KB	2001/0044155	11/01	Paul, et al.	436	161	
	KC	6,321,791	11/01	Chow	137	833	
	KD	6,322,753	11/01	Lindberg, et al.	422	192	
	KE	6,324,058	11/01	Hsiao	361	699	
	KF	2001/0046703	11/01	Burns, et al.	435	303.1	
	KG	3,923,426	12/75	Theeuwes	417	48	
	KH	4,312,012	01/82	Frieser, et al.	357	82	
	KI	4,450,472	05/84	Tuckerman, et al.	357	82	

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	KJ	"Silicon Micromachining for Integrated Microsystems," Esashi, Vacuum; Jun – Aug 1996, v. 47, no. 6 - 8
		pp. 469 - 474

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	LA	4,516,632	05/85	Swift, et al.	165	167	
	LB	4,516,632	12/85	Eastman, et al.	361	385	
	LC	4,567,505	01/86	Pease, et al.	357	81	
	LD	4,573,067	02/86	Tuckerman, et al.	357	82	
	LE	4,758,926	07/88	Herrell, et al.	361	385	
	LF	4,868,712	09/99	Woodman	361	388	
	LG	4,894,709	01/90	Phillips, et al.	357	82	
	LH	4,908,112	03/90	Pace	204	299	

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	LJ	"Experimental evaluation of micro heat exchangers fabricated in silicon", Kuan, American Society of Mechanical Engineers, Heat Transfer Division, (Publication) HTD; 1996; v.331, p.131-136

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	MA	5,016,138	05/91	Woodman	361	381	
	MB	5,057,908	10/91	Weber	357	81	
	MC	5,070,040	12/91	Pankove	437	209	
	MD	5,083,194	01/92	Bartilson	357	81	
	ME	5,096,388	03/92	Weinberg	417	322	
	MF	5,099,311	03/92	Bonde, et al.	357	82	
	MG	5,125,451	06/92	Matthews	165	80.4	
	MH	5,099,910	03/92	Walpole, et al.	165	80.4	
	MI	5,131,233	07/92	Cray, et al.	62	64	

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	MJ	"Flow characteristics of water through a microchannel between two parallel plates with electrokinetic effects", Mala et al., International Journal of Heat and Fluid Flow; Oct 1997; v.18, no.5, p.489-496

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	NA	5,203,401	04/93	Hamburgen, et al.	165	80.4	
	NB	5,218,515	06/93	Bernhardt	361	385	
	NC	5,219,278	06/93	Van Lintel	417	413	
	ND	5,230,564	07/93	Bartilson, et al.	374	178	
	NE	5,232,047	08/93	Matthews	165	168	
	NF	5,239,200	08/93	Messina, et al.	257	714	
	NG	5,263,251	11/93	Matthews	29	840.036	
	NH	5,274,920	01/94	Matthews	29	890.039	
	NI	5,281,026	01/94	Bartilson, et al.	374	143	

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	NJ	"Heat transfer and fluid flow in microchannels", Mala et al., International Journal of Heat and Mass Transfer; Sep 1997; v.40, no.13, p.3079-3088

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Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	OA	5,309,319	05/94	Messina	361	699	
	OB	5,317,805	06/94	Hoopman, et al.	29	890.03	
	OC	5,325,265	06/94	Turlik, et al.	361	702	
	OD	5,336,062	08/94	Richter	417	413	
	OE	5,383,340	01/95	Larson, et al.	62	259.2	
	OF	5,427,174	06/95	Lomolino, Sr., et al.	165	1	
	OG	5,436,793	07/95	Sanwo, et al.	361	689	
	OH	5,459,099	10/95	Hsu	437	180	
	OI	5,508,234	04/96	Dusablon, Sr., et al.	437	228	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	OJ	"Enhancement of Multichip Modules ("MCMs) cooling by incorporating microheatpipes and other high thermal conductivity materials into microchannel heat sinks", Marongiu et al., Proceedings -Electronic Components and Technology Conference; 1998; p.45-50

* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

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INFORMATION DISCLOSURE CITATION *(Use several sheets if necessary)*	Applicant **Goodson, et al.**	
	Filing Date **01/19/02**	Group **3743**

U.S. PATENT DOCUMENTS

Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	PA	5,514,832	05/96	Dusablon, Sr., et al.	174	15.1	
	PB	5,514,906	05/96	Love, et al.	257	712	
	PC	5,575,929	11/96	Yu, et al.	216	10	
	PD	5,641,400	06/97	Kaltenbach, et al.	210	198.2	
	PE	5,692,558	12/97	Hamilton, et al.	165	80.4	
	PF	5,696,405	12/97	Weld	257	714	
	PG	5,703,536	01/98	Davis, et al.	330	289	
	PH	5,704,416	01/98	Larson, et al.	165	104.33	
	PI	5,727,618	03/98	Mundinger, et al.	165	80.4	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	PJ	"Integrated electroosmotic pumps and flow manifolds for total chemical analysis systems", Manz et al., Conference: 1991 International Conference on Solid-State Sensors and Actuators, 1991 Jun 24-28, San Francisco, CA, USA

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U.S. PATENT DOCUMENTS

Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	QA	5,759,014	06/98	Van Lintel	417	413.3	
	QB	5,763,951	06/98	Hamilton, et al.	257	714	
	QC	5,774,779	06/98	Tuchinskiy	419	2	
	QD	2001/0055714	12/01	Cettour-Rose, et al.	429	122	
	QE	6,337,794	01/02	Agonafer, et al.	361	690	
	QF	5,942,093	08/99	Rakestraw, et al.	204	450	
	QG	6,351,384	02/02	Daikoku, et al.	361	704	
	QH	6,186,660	02/01	Kopf-Still, et al.	366	340	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	Translation No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	QI	"Electroosmotically induced hydraulic pumping with integrated electrodes on microfluidic devices", McKnight et al., Analytical Chemistry; Aug 15, 2001; v.73, no.16, p.4045-4049

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U.S. PATENT DOCUMENTS

Examiner Initials	Item	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	RA	6,068,752	05/00	Dubrow, et al.	204	604	
	RB	6,090,251	07/00	Sundberg, et al.	204	453	
	RC	6,100,541	08/00	Nagle, et al.	250	573	
	RD	6171,067	01/01	Parce	417	48	
	RE	6,176,962	01/01	Soane, et al.	156	292	
	RF	6,210,986	04/01	Arnold, et al.	438	42	
	RG	6,221,226	04/01	Kopf-Sill	204	602	
	RH	6,277,257	08/01	Paul, et al.	204	450	
	RI	5,216,580	09/93	Davidson, et al.	361	385	
	RJ	5,560,423	10/96	Larson, et al.	165	104.26	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	Translation No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	RK	"Microchannel heat sinks for two-dimensional high-power-density diode laser arrays", Missaggia et al., IEEE Journal of Quantum Electronics; Sep 1989; v.25, no.9, p.1988-1992

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FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	SA	"Partial electroosmotic pumping in complex capillary systems. Part 1: Principles and general theoretical approach", Morf et al., Sensors and Actuators, B: Chemical; Feb 2001; v.72, no.3, p.266-272
	SB	"High average power 2-D laser diode arrays on silicon microchannel collers", Mundinger et al., Conference: Conference on Lasers and Electro-Optics, 1989 Apr 24-28, Baltimore, MD, USA
	SC	"Parametric optimization of multichanneled heat sinks for VLSI chip cooling", Murakami et at., IEEE Transactions on Components and Packaging Technologies; March 2001; v.24, no.1, p.2-9
	SD	"Experimental investigation of heat transfer in flat plates with rectangular microchannets", Peng et al., International Journal of Heat and Mass Transfer; Jan 1995; v.38, no.1, p.127-137
	SE	'Forced convection and flow boiling heat transfer for liquid flowing through microchannels", Peng et al., International Journal of Heat and Mass Transfer; Sep 1993; v.36, no.14, p.3421-3427
	SF	"Enhancing the critical heat flux using microchanneled surfaces", Peng et al., Journal of Enhanced Heat Transfer; 1998; v.5, no.3, p.165-176
	SG	'Cooling characteristics with microchannled structures", Peng et al., Journal of Enhanced Heat Transfer; 1994; v.1, no.4, p.315-326
	SH	"Convective heat transfer and flow friction for water flow in microchannel structures", Peng et at., International Journal of Heat and Mass Transfer; Aug 1996; v.39, no.12, p.2599-2608

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FOREIGN PATENT DOCUMENTS

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	TA	"Heat transfer characteristics of water flowing through microchannels", Peng et al., Experimental Heat Transfer; Oct-Dec 1994; v.7, no. 4, p.265-283
	TB	"Microchannel integrated heat sinks in silicon technology", Perret et al., Conference Record - IAS Annual Meeting (IEEE Industry Applications Society); 1998; v.2, p.1051-1055
	TC	"Performance of a MEMS based micro capillary pumped loop for chip-level temperature control",Pettigrew et al., Proceedings of the IEEE Micro Electro Mechanical Systems (MEMS); 2001; p.427-430
	TD	"Liquid transport in micron and submicron channels", Pfahler et at., Sensors and Actuators, A: Physical; 3 Pt3 1990; v.22, no. 1-3, p.431-434
	TE	"Experimental measurements of fluid flow and heat transfer in microchannel cooling passages in a chip substrate", Rahman et al., American Society of Mechanical Engineers, EEP; 1993; v.4-2,p.685-692
	TF	"Flow rate measurement via conductivity monitoring in micro-fluidic devices", Rainey et al., Proceedings of SPIE - The International Society for Optical Engineering; 2000; v. 4177, p. 185-193
	TG	"Fabrication techniques to realize CMOS-compatible microfluidic microchannels", Rasmussen et al., Journal of Microelectromechanical Systems; June 2001; v. 10, no. 2, p.286-297
	TH	"Impact of channel geometry on two-phase flow heat transfer characteristics of refrigerants in microchannel heat exchangers", Ravigururajan, Journal of Heat Transfer, Transactions ASME; May 1998; v.120, no.2, p.485-491

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FOREIGN PATENT DOCUMENTS

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	UA	"Liquid flow characteristics in a diamond-pattern micro-heat-exchanger", Ravigururajan et at., American Society of Mechanical Engineers, Dynamic Systems and Control Division (Publication) DSC; 1996; v.59, p.159-166
	UB	"Single-phase flow thermal performance characteristics of a parallel micro-channel heat exchanger", Ravigururajan et al., American Society of Mechanical Engineers, Heat Transfer Division, (Publication) HTD; 1996; v.329, no. 7, p.157-166
	UC	"Effect of heat flux on two-phase flow characteristics of refrigerant flows in a micro-channel heat exchanger", Ravigururajan et al., American Society of Mechanical Engineers, Heat Transfer Division, (Publication) HTD; 1996; v.329, no. 7, p.167-178
	UD	"Acousto-and electroosmotic microfluidic controllers", Rife et al., Proceedings of SPIE – The International Society for Optical Engineering; 1998; v.3515, p.125-135
	UE	"Liquid flow and heat transfer in microchannels: A review", Rostami et al., Heat and Technology; 2000; v.18, no. 2, p.59-68"
	UF	"Very high heat flux microchannel heat exchanger for cooling of semiconductor laser diode arrays", Roy et al., IEEE Transactions on Components, Packaging, and Manufacturing Technology Part B: Advanced Packaging; May 1996; v.19, no.2, p.444 - 451
	UG	"Convective heat transfer in microchannels", Samalam, Journal of Electronic Materials, Vol. 18, pp. 611-617, 1989

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FOREIGN PATENT DOCUMENTS

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	VA	"Optimal structure for microgrooved cooling fin for high-power LSI devices", Sasaki, S.; Kishimoto, Electronics Letters; Dec 4, 1986; v.22, no. 25, p.1332-1334
	VB	"Electroosmotic pumping and valveless control of fluid flow within a manifold of capillaries on a glass chip", Seiler, et al., Analytical Chemistry; October 15, 1994; v.66, no. 20, p.3485-3491
	VC	"Micro heat spreader enhanced heat transfer in MCMs", Shen et al., Proceedings of the IEEE Multi-Chip Module Conference; January 31, 1995; p.189-194
	VD	"Microflow devices and systems", Shoji et al., Journal of Micromechanics and Microengineering; Dec 1994; v.4, no.4, p.157-171
	VE	"Overview of fabrication methods and fluid flow and heat transfer characteristics of micro channels", Sunden et al., Conference: Second Baltic Heat Transfer Conference, 1995 Aug 21-23, Jurmala, Latvia
	VF	"Electrokinetic dewatering and thickening. I. Introduction and historical review of electrokinetic applications", Sunderland, J Appi Electrochem; Sep 1987; v.17, no.5, p.889-898
	VG	"High-performance heat sinking for VLSI", Tuckerman et al., IEEE Electron Device Left; May 1981; v.EDL-2, no. 5, p.126-129

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	WA	"Analysis of two-layered micro-channel heat sink concept in electronic cooling", Vafal et al., International Journal of Heat and Mass Transfer; Jun 1999; v.42, no. 12, p.2287-2297
	WB	"Two-phase flow in microchannels", Stanley, et al., Microelectromechanical Systems (MEMS), DSC-Vol. 62/HTD-Vol.254, p.143-152
	WC	"Experimental investigation on liquid forced-convection heat transfer through microchannels", Wang et al., International Journal of Heat and Mass Transfer; Mar 1994; v.37, no. SUPPL 1, p.73-82
	WD	"Analysis of microchannels for integrated cooling", Weisberg et al., International Journal of Heat and Mass Transfer; Oct 1992; v.35, no. 10, p. 2465-2474
	WE	"Micro fluidic system of micro channels with on-site sensors by silicon bulk micromachining", Yang et al., Proceedings of SPIE - The International Society for Optical Engineering; 1999; v. 3877, p.267-272
	WF	"Modeling forced liquid convection in rectangular microchannels with electrokinetic effects", Yang et at., International Journal of Heat and Mass Transfer; Dec 1998; v.41, no. 24, p.4229-4249
	WG	"Uniform channel micro heat exchangers", Yin et al, Journal of Electronic Packaging, Transactions of the ASME; Jun 1997; v.119, no.2, p.89-93
	WH	"Fabrication, Derivatization and Applications of Plastic Microfluidic Devices", Barker, et at., Proceedings of SPIE - The International Society for Optical Engineering, Nov. 2000, v.4205, p.ll2-118

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	XA	"Experimental and theoretical investigation of fluid flow and heat transfer in microtubes", Yu et al., ASME/JSME Thermal Engineering Joint Conference - Proceedings; 1995; v.1, p.523-530
	XB	"Fabrication and characterization of electrokinetic micro pumps", Zeng et at., Thermomechanical Phenomena in Electronic Systems -Proceedings of the Intersociety Conference; 2000; v.2, p.31-36
	XC	"Experimental study on local heat transfer with liquid impingement flow in two-dimensional microchannels", Zhuang et al., International Journal of Heat and Mass Transfer, Oct 1997, v.40, no. 17, p.4055-4059
	XD	"Heat out of small packages", Joshi, Mechanical Engineering, Dec. 2001, p.56-58
	XE	"Heat Exchange Element for Semiconductor Device Cooling", Edmonds, et at., IBM Technical Disclosure Bulletin, Aug 1980, v.23, no.3, p.1057
	XF	"Liquid Cooling of Integrated Circuit Chips", Anacker, IBM Technical Disclosure Bulletin, Feb 1978, v.20, no.9, p.3742-3743
	XG	"Heat transfer from silicon chips and wafers", Noth, IBM Technical Disclosure Bulletin, May 1975, v.17, no.12, p.3544
	XH	"Forced boiling cooling system with jet enhancement for critical heat flux extension", IBM Technical Disclosure Bulletin, Oct 1996, v.39, no. 10, p.143

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FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	YA	"Miniature heat exchanger for corrosive media", IBM Technical Disclosure Bulletin, Jan 1995, v.38, no.01, p.55-56
	YB	"Self-contained active heat dissipation device", IBM Technical Disclosure Bulletin, Apr 1996, v.39, no.04, p.115-116
	YC	"Liquid jet cooling of integrated circuit chips", Sachar, IBM Technical Disclosure Bulletin, Feb 1978, v.20, no.9, p.3727-3728
	YD	"Centerless ceramic package with directly connected heat sink", Ronkese, IBM Technical Disclosure Bulletin, Feb 1978, v.20, no.9, p.3577-3578
	YE	"Jet cooling cup for cooling semiconductor devices", Keller, et al., IBM Technical Disclosure Bulletin, Feb 1978, v.20, no.9, p.3575-3576
	YF	"Device cooling", Johnson, IBM Technical Disclosure Bulletin, Mar 1978, v.20, no.10, p.3919-3920
	YG	"Integrated circuit module package cooling structure", Pascuzzo, et al., IBM Technical Disclosure Bulletin, Mar 1978, v.20, no.10, p.3898-3899
	YH	"Integrated module heat exchanger", Antonetti, et al., IBM Technical Disclosure Bulletin, Apr 1978, v.20, no. 11A, p.4498

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	ZA	"Temperature triggerable fluid coupling system for cooling semiconductor dies", Dorler, et al., IBM Technical Disclosure Bulletin, Apr 1978, v.20, no.11A, p.4386-4388
	ZB	"Flexible thermal conductor for electronic module", Durand, et al., IBM Technical Disclosure Bulletin, Apr 1978, v.20, No.1 1A, p.4343
	ZC	"Liquid cooling of a multichip module package", Balderes, et al., IBM Technical Disclosure Bulletin, Apr 1978, v.20, no.11A, p.4336-4337
	ZD	"Conduction cooling module", Hwang, et al. IBM Technical Disclosure Bulletin, Apr 1978, v.20, no.1 1A, p.4334-4335
	ZE	"Electronic packaging structure", Arnold, et al., IBM Technical Disclosure Bulletin, Apr 1978, v.20, no.11B, p.4820-4822
	ZF	"High performance package for memory", Doo, et al., IBM Technical Disclosure Bulletin, July 1978, v.21, no.2, p.585-586
	ZG	"Multi-chip package with cooling by a spreader plate in contact with a chip having cylindrical holes mating with an inverse frame providing water flow within its pins", IBM Technical Disclosure Bulletin, Oct 1988, v.31, no.5, p.141-142
	ZH	"Cooling system for semiconductor chips", Landrock, et al., IBM Technical Disclosure Bulletin, Sep 1980, v.23, no.4, p.1483

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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AAA	"Chip cooling", Krumm, IBM Technical Disclosure Bulletin, Dec 1977, v.20, no.7, p.2728
	AAB	"Convection cooling apparatus", Damm, IBM Technical Disclosure Bulletin, Dec 1977, v.20, no.7, p.2755-2756
	AAC	"TCM-like circuit module with local heat sink resting on chip and chip separated from coolant by bellows with pins and deflector plate attached to local heat sink and extending above bellows into region_of coolant flow", IBM Technical Disclosure Bulletin, Apr 1989, v.31, no.11, p.305-306
	AAD	"Circuit module cooling with multiple pistons contacting a heat spreader/electrical buffer plate in contact with chip", IBM Technical Disclosure Bulletin, May 1989, v.31, no.12, p.5-7
	AAE	"Circuit package with circulating boiling liquid and local heat exchanger to limit vapor in coolant outlet", IBM Technical Disclosure Bulletin, May 1989, v.31, no.12, p.[34]
	AAF	"Water-cooled circuit module with grooves forming water passages near heat-producing devices", IBM Technical Disclosure Bulletin, May 1989, v.31, no.12, p.49-50
	AAG	"Cold plate for thermal conduction module with only peripheral mounting bolts, large surface area fin inserts and reduced water flow and thermal resistances", IBM Technical Disclosure Bulletin, May 1989, v.31, no.12, p.59
	AAH	"Thermal control hardware for accelerated run-in testing of multi-chip modules", IBM Technical Disclosure Bulletin, Oct 1989, v.32, no.5A, p.129-130

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FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	ABA	"Means of removing more heat from a TCM (or other liquid-cooled logic package) by reducing the coolant temperature", IBM Technical Disclosure Bulletin, Oct 1989, v.32, no.5A, p.153-154
	ABB	"Liquid cooled module with compliant membrane", Loeffel, et al., IBM Technical Disclosure Bulletin, July 1977, v.20, no.2, p. 673-574
	ABC	"Method of effective cooling of a high power silicon chip", Doo, et al., IBM Technical Disclosure Bulletin, Sep 1977, v.20, no.4, p.1436-1437
	ABD	"Semiconductor chip cooling package", Doo, et al., IBM Technical Disclosure Bulletin, Sep 1977, v.20, no.4, p.1440-1441
	ABE	"Pin fin array heat pipe apparatus", IBM Technical Disclosure Bulletin, Sep 1994, v.37, no.09, p.171
	ABF	"Heat sink fabrication method", IBM Technical Disclosure Bulletin, Mar 1985, v.27, no.10A, p.5656-5657
	ABG	"Thermal conduction module with liquid dielectric and pistons with surface treatment for enhanced nucleate boiling", IBM Technical Disclosure Bulletin, May 1985, v.27, no.12, p.6904
	ABH	"Etched silicon integrated circuit heat sink", Brady, et al., IBM Technical Disclosure Bulletin, June 1984, v.27, no.IB, p.627

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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	ACA	"Thermoelectrically cooled module", Skobern, IBM Technical Disclosure Bulletin, June 1984, v.27, no.1A, p.30
	ACB	"Heat-pipe vapor cooling etched silicon structure", Eldridge, et al., IBM Technical Disclosure Bulletin, Jan 1983, v.25, no.8, p.4118-4119
	ACC	"Silicon heat sink for semiconductor ship", Chu, et al., IBM Technical Disclosure Bulletin, Apr 1982, v.24, no.11A, p.5743
	ACD	"Data processor cooling with connection to maintain flow through standby pump", Goodman, IBM Technical Disclosure Bulletin, Dec 1983, v.26, no.7A, p.3325
	ACE	"Cooling system for data processor with flow restricter in secondary loop to limit bypass-cooling water flow", Gallagher, et al., IBM Technical Disclosure Bulletin, Oct 1983, v.26, no.5, p.2658
	ACF	"Cold plate for thermal conduction module with improved flow pattern and flexible base", Hwang, et al., IBM Technical Disclosure Bulletin, Feb 1983, v.25, no.9, p.4517
	ACG	"Structure for the removal of heat from an integrated circuit module", Arnold, IBM Technical Disclosure Bulletin, Nov 1979, v.22, no.6, p.2294-2296
	ACH	"Heat sink design for cooling modules in a forced air environment", Arnold, et al., IBM Technical Disclosure Bulletin, Nov 1979 v.22, no.6, p.2297-2298

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		Document Number	Date	Country	Class	Subclass	Translation	
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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	ADA	"Distributed power/thermal control", Chrisfield, et al, IBM Technical Disclosure Bulletin, Aug 1979, v.22, no. 3, p.1131-1132
	ADB	"Liquid-filled bellows heat sink", Kleinfelder, et al., IBM Technical Disclosure Bulletin, Mar 1979, v.21, no. 10, p.4125-4126
	ADC	"Cooling device for controlled rectifier", Bailey et al., IBM Technical Disclosure Bulletin, Apr 1979, v.21, no. 11, p.4609-4610
	ADD	"Silicon heat sink method to control integrated circuit chip operating temperatures", Ahearn, et al., IBM Technical Disclosure Bulletin, Jan 1979, v.21, no. 8, p.3378-3380
	ADE	"Chip cooling device", IBM Technical Disclosure Bulletin, Feb 1988, v.30, no. 9, p. 435-436
	ADF	"Cooling system for chip carrier on card", IBM Technical Disclosure Bulletin, Sep 1988, v.31, no. 4, p.39-40
	ADG	"Piping system with valves controlled by processor for heating circuit modules in a selected temperature profile for sealing integrity test under temperature stress", IBM Technical Disclosure Bulletin, Oct 1987, v.30, no. 5, p.336
	ADH	"Circuit module cooling with coaxial bellows providing inlet, outlet and redundant connections to water-cooled element", IBM Technical Disclosure Bulletin, Oct 1987, v.30, no. 5, p.345-347

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AEA	"Cold plate for thermal conduction module with inlet for cooling water near highest power chips", IBM Technical Disclosure Bulletin, Oct 1987, v.30, no. 5, p.413
	AEB	"Heat exchanger modules for data processor with valves operated by pressure from cooling water pump", IBM Technical Disclosure Bulletin, Oct 1987, v. 30, no. 5, p.419
	AEC	"Enhanced cooling of thermal conduction module", IBM Technical Disclosure Bulletin, Oct 1987, v.30, no. 5, p.426
	AED	"Integrally grooved semiconductor chip and heat sink", IBM Technical Disclosure Bulletin, Oct 1971, v.14, no. 5, p.1425
	AEE	"Structure for cooling by nucleate boiling", Riseman, IBM Technical Disclosure Bulletin, Apr 1976, v.18, no. 11, p.3700
	AEF	"Process for nucleate boiling enhancement", Chu, et al., IBM Technical Disclosure Bulletin, Dec 1975, v.18, no. 7, p.2227
	AEG	"Electroerosion micropump", IBM Technical Disclosure Bulletin, May 1990, v.32, no. 12, p.342-343
	AEH	"Thin heat pipe for cooling components on printed circuit boards", IBM Technical Disclosure Bulletin, Dec 1991, v.34, no. 7B, p.321-322

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AFA	"A heat transfer enhancement method for forced convection bonded-fin heatsinks", Waldvogel, Motorola Technical Developments, Dec 1997, p.158-159
	AFB	"Aluminum silicon carbide phase change heat spreader", Waidvogel, Motorola Technical Developments, June 1999, p.226-230
	AFC	"An idea for maintaining a stable thermal environment for electronic devices", Slupe, et al., Research Disclosure, Aug 2001, p.13 12
	AFD	'Autonomous displacement of a solution in a microchannel by another solution", Research Disclosure, June 2001, p.1046
	AFE	"Thermal ink jet print head carriage with integral liquid cooling capabilities", Barner, et al., Xerox Disclosure Journal, Feb 1996, v.21, no.1, p.33-34
	AFF	"Semiconductor laser body heat sink", Tramontana, Xerox Disclosure Journal, Dec 1985, v.10, no.6, p379-381
	AFG	"Heat generation and transport in sub-micron semiconductor devices", Fushinobu et al., American Society of Mechanical Engineers, Heat Transfer Division, (Publication) HTD; 1993; v.253, p.21-28
	AFH	"Integrated micro heat sink for power multichip module", Gillot et al., IEEE Transactions on Industry Applications; Jan-Feb 2000; v.36, no.1, p.217-221

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AGA	"Integrated single and two-phase micro heat sinks under IGBT chips", Gillot et al., IEEE Transactions on Components and Packaging Technologies: 1999; v.22, no.3, p.384-389
	AGB	"Microchannel heat exchangers: a review", Goodling, Proceedings of SPIE - The International Society for Optical Engineering; 1993; v.1997, p.66-82
	AGC	"Partial electroosmotic pumping in complex capillary systems. Part 2: Fabrication and application of a micro total analysis system suited for continuous volumetric nanotitrations", Guenat et al., Sensors and Actuators, B: Chemical; Feb 2001; v.72, no. 3, p.273-282
	AGD	"Micro-channel heat exchanger optimization", Harpole et al., Proceedings - IEEE Semiconductor Thermal and Temperature Measurement Symposium; Feb 1991; p.59-63
	AGE	"Design and fabrication of a cross flow micro heat exchanger", Harris et al., Journal of Microelectromechanical Systems; Dec 2000; v.9, no.4, p.502-508
	AGF	"Electroosmotic pumping within a chemical sensor system integrated on silicon", Harrison et al., Conference: 1991 International Conference on Solid-State Sensors and Actuators, 1991 Jun 24-28, San Francisco, CA, USA
	AGG	"Nonuniform temperature distribution in electronic devices cooled by flow in parallel microchannels", Hetsroni et al., IEEE Transactions on Components and Packaging Technologies; March 2001; v.24, no.1, p.16-23
	AGH	"Fused quartz substrates for microchip electrophoresis", Jacobson et at., Analytical Chemistry; July 1, 1995; v.67, no.13, p.2059-2063

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OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AHA	"Thermal-hydraulic performance of small scale micro-channel and porous-media heat-exchangers", Jiang et at., International Journal of Heat and Mass Transfer; Mar 2001; v.44, no.5, p.1039-1051
	AHB	"Fabrication and characterization of a microsystem for a micro-scale heat transfer study", Jiang et at., Journal of Micromechanics and Microengineering; Dec 1999; v.9, no.4, p.422-428
	AHC	"Micro-channel heat sink with integrated temperature sensors for phase transition study", Jiang et al., Proceedings of the IEEE Micro Electro Mechanical Systems (MEMS); 1999; p.159-164
	AHD	"Heat-transfer microstructures for integrated circuits", Tuckerman, Dissertation submitted to Dept. of Electrical Engineering, Stanford University, Feb. 1984
	AHE	"Micro heat exchangers fabricated by diamond machining", Friedrich, et al., Precision Engineering, v.16, no.1, Jan 1994, p.56-59
	AHF	"Electroosniotic flow control in micro channels produced by scanning excimer laser ablation", Wagner et at, Proceedings of SPIE - The International Society for Optical Engineering; 2000; v.4088, p.337-340
	AHG	"Thermal management in semiconductor device packaging", Mahalingam, Proceedings of the IEEE, v.73, no.9, Sep 1985, p.1396-1404
	AHH	"Applicability of Traditional turbulent single-phase forced convection correlations to non-circular microchannels", Adams et al., International Journal of Heat and Mass Transfer, 1999; v.42, no.23, p.4411-4415

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FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AIA	"Experimental investigation of single-phase forced convection in microchannels", Adams et al., International Journal of Heat and Mass Transfer; Mar-Apr 1998; v.41, no.6-7, p.851-857
	AIB	"Liquid transport in rectangular microchannels by electroosmotic pumping", Arulanandam et al., Colloids and Surfaces A: Physicochemical and Engineering Aspects; 2000; v.161, no.1, p.89-102
	AIC	"Experimental results for low-temperature silicon micromachined micro heat pipe arrays using water and methanol as working fluids", Badran et al., Experimental Heat Transfer; Oct-Dec 1997; v.10, no.4, p.253-272
	AID	"Optimization of conduits' shape in micro heat exchangers", Bau, International Journal of Heat and Mass Transfer; Sep 1998; v.41 no.18, p.2717-2723
	AIE	"Modular microchannel cooled heatsinks for high average power laser diode arrays", Beach et al., IEEE Journal of Quantum Electronics; Apr 1992; v.28, no.4, p.966-976
	AIF	"Two-phase electronic cooling using mini-channel and micro-channel heat sinks: Part 2- flow rate and pressure drop constraints", Bowers et al., Journal of Electronic Packaging, Transactions of the ASME; Dec 1994; v.116, no.4, p.298-305
	AIG	"High flux boiling in low flow rate, low pressure drop mini-channel and micro-channel heat sinks", Bowers et al., International Journal of Heat and Mass Transfer; Jan 1994; v.37, no.2, p321-332
	AIH	"Microflow devices for miniaturized chemical analysis systems", Buettgenbach et al., Proceedings of SPIE - The International Society for Optical Engineering; 1998; v.3539, p.51-61

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FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AJA	"Fluid flow and heat transfer in microtubes", Choi et al., American Society of Mechanical Engineers, Dynamic Systems and Control Division (Publication) DSC; 1991; v.32, p.123-134
	AJB	'Optimum design of microchannel heat sinks", Choquette et al., American Society of Mechanical Engineers, Dynamic Systems and Control Division (Publication) DSC; 1996; v.59, p.115-126
	AJC	"Manifold microchannel heat sinks: Theory and experiment", Copeland et al., American Society of Mechanical Engineers, EEP; 1995; v.10-2, p.829-835
	AJD	"Fabrication and testing of microchannel heat exchangers", Cuta et al, Proceedings of SPIE - The International Society for Optical Engineering; 1995; v.2640, p.152-160
	AJE	"Forced convection heat transfer in parallel channel array microchannel heat exchanger", Cuta et al., American Society of Mechanical Engineers, Heat Transfer Division, (Publication) HTD; 1996; v.338, p.17-23
	AJF	"Electroosmosis: A reliable fluid propulsion system for flow injection analysis", Dasgupta et al., Analytical Chemistry; June 1, 1994; v.66, no.11, p.1792-1798
	AJG	"Micromachining of buried micro channels in silicon", de Boer et al., Journal of Microelectromechanical Systems; 2000; v.9, no.1, p.94-103
	AJH	"Forced convection boiling in a microchannel heat sink", Jiang et al., Journal of Microelectromechanical Systems; March 2001; v.10, no.1, p.80-87

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FOREIGN PATENT DOCUMENTS

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	AKA	"Laminar flow through microchannels used for microscale cooling systems", Jiang et al., Proceedings of the Electronic Technology Conference, EPTC; 1997; p.119-122
	AKB	"Fabrication of monolithic microchanriels for IC chip cooling", Joo et al., Proceedings of the IEEE Micro Electro Mechanical Systems; 1995; p.362-367
	AKC	"Performance test and analysis of silicon-based microchannel heat sink", Kang et al, Proceedings of SPIE - The International Society for Optical Engineering; 1999; v.3795, p.259-270
	AKD	"Micro heat exchangers consisting of pin arrays", Yin, et al., Journal of Electronic Packaging, Mar. 1996, v.118, p.51-57
	AKE	"Measurements of Heat Transfer in Microchannel Heat Sinks", Rahman, International Communications in Heat and Mass Transfer, May 2000, v.27, no.4, p.495-506
	AKF	"Enhancement of Critical Heat Flux From High Power Microelectronic Heat Sources in a Flow Channel", Mudawar, et at., Journal of Electronic Packaging, Sept. 1990, v.132, p.241-248
	AKG	"Closed-Loop Electroosmotic Microchannel Cooling System for VLSI Circuits", Jiang, et at., printed in Journal of MEMS, Jan. 2002
	AKH	"Liquid Flows in Microchannels", Sharp, et al., CRC Press, 2002, Chapter 6, p.6-1 to 6-38

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							Yes	No

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*

	ALA	"Fabrication and characterization of electrokinetic micro pumps", Zeng, et al., 2000 Inter Society Conference on Thermal Phenomena, May 2000, p.31 -35
	ALB	"Thermal-hydraulic characteristic of micro heat exchangers", Wang, et al., American Society of Mechanical Engineers, Dynamic Systems and Control Division, DSC, 1991 ,v.32, p.331-339
	ALC	"Electrokinetic Generation of High Pressures Using Porous Microstructures", Paul, et at., Micro-total analysis systems, 1998, Banff, Canada 1998, p.49-52

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